

## PATENT COOPERATION TREATY

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REC'D 23 MAY 2006

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## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 26355	FOR FURTHER ACTION See Form PCT/PEA/416	
International application No. PCT/EP2004/014756	International filing date (day/month/year) 23.12.2004	Priority date (day/month/year) 15.01.2004
International Patent Classification (IPC) or national classification and IPC INV. B01D29/96		
Applicant UFI FILTERS S.P.A.		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> <i>sent to the applicant and to the International Bureau</i> a total of 4 sheets, as follows:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</li> <li><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</li> </ul> <p>b. <input type="checkbox"/> <i>(sent to the International Bureau only)</i> a total of (Indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Box No. I Basis of the report</li> <li><input type="checkbox"/> Box No. II Priority</li> <li><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li><input type="checkbox"/> Box No. IV Lack of unity of invention</li> <li><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li><input type="checkbox"/> Box No. VI Certain documents cited</li> <li><input type="checkbox"/> Box No. VII Certain defects in the international application</li> <li><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</li> </ul>		
Date of submission of the demand 10.11.2005	Date of completion of this report 19.05.2006	
Name and mailing address of the International preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Hilt, D  Telephone No. +49 89 2399-6577	



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2004/014756

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
    - international search (under Rules 12.3 and 23.1(b))
    - publication of the international application (under Rule 12.4)
    - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

2-7 as originally filed  
1 received on 11.11.2005 with letter of 10.11.2005

**Claims, Numbers**

1-9 received on 11.11.2005 with letter of 10.11.2005

**Drawings, Sheets**

1/4-4/4 as originally filed

- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
- 3.  The amendments have resulted in the cancellation of:
  - the description, pages
  - the claims, Nos.
  - the drawings, sheets/figs
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):
- 4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
  - the description, pages
  - the claims, Nos.
  - the drawings, sheets/figs
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	1-9
	No: Claims	
Inventive step (IS)	Yes: Claims	3-6
	No: Claims	1,2,7-9
Industrial applicability (IA)	Yes: Claims	1-9
	No: Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

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**Box No. VIII Certain observations on the international application**

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

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**Re Item V**

Reference is made to the following documents:

D1: US 2003/196939 A1 (BINDER WALTER ET AL) 23 October 2003 (2003-10-23)  
D2: WO 02/100511 A (UFI UNIVERSAL FILTER INTERNATIONAL S.P.A; GIRONDI, GIORGIO) 19 December 2002 (2002-12-19)  
D3: US 5 589 060 A

The document D3 was not cited in the international search report. A copy of the document is appended hereto.

**1- ARTICLE 33 (3) PCT - INVENTIVE STEP**

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1 does not involve an inventive step in the sense of Article 33(3) PCT.

**1.1- Independent apparatus claim 1**

The document D2, which is considered to represent the most relevant state of the art, discloses a filter for internal combustion engine liquids from which the subject-matter of claim 1 differs in that that part (10) of the system associated with the cartridge is located **within the central compartment** of this latter, and that part (111) of the system associated with the cover is dimensioned and shaped to be able to be inserted into the preceding and coupled thereto, where it retains the facing end of the cartridge in the immediate vicinity of the cover.

The problem to be solved by the present invention may therefore be regarded as to propose a filter which permits to maximise the filtering surface present in the cavity of the filter housing (page 2 lines 6-12).

This is achieved by locking one of the ends of the filter cartridge in the immediate vicinity of the cover (page 3 line 5).

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The solution proposed in claim 17 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

The feature "locating the snap connection system within the central compartment of the toroidal filter cartridge" is merely one of several straightforward possibilities from which the skilled person would select, in accordance with circumstances, without the exercise of inventive skill, in order to solve the problem posed (see doc. D1, fig.1; doc D3, fig. 1,4 and 5)

**1.2- Dependent claims 2,7-9**

Dependent claims 2,7-9 do not contain any features which, in combination with the features of any claim to which they refer, meets the requirements of the PCT in respect of inventive step.

**1.3- Dependent claim 3-6**

The skilled person would not regard as a normal option to include the features of the dependent claims 3-6 in the apparatus disclosed in the document D1 in order to solve the problem posed. So independent claims 3-6 meet the requirements of the PCT with respect to novelty and inventive step.

**Re Item VIII**

The application does not meet the requirements of Article 6 PCT, because claims 5, 6, 8 are not clear.

Claim 5 refers to the feature "predetermined angle for releasing the cartridge" which lacks antecedent basis, since it has not been defined in claims 1,2,3 and 4.

Claim 6 refers to the features "annular body", " recesses", "recess" which lack antecedent basis, since they have not been defined in claim 1.

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Claim 8 refers to the feature "a part of an annular body" which lacks antecedent basis, since it has not been defined in claims 1 and 7.

DESCRIPTION

## FILTER FOR INTERNAL COMBUSTION ENGINES

TECHNICAL FIELD

5 The present invention relates, in a totally general sense, to internal combustion engines and more particularly to a filter for liquids, such as oil or diesel fuel, to be associated with said engines.

More specifically, the invention relates to improvements in the filter of

WO 02/100 511

Italian Patent Application No. RE2001A000065 in the name of the same

10 Applicant.

PRIOR ART

The filter described in said document comprises a generally cup-shaped casing which is closed by a removable cover, and contains a disposable 15 tubular filter cartridge.

Said cartridge divides the interior compartment of the cup into two chambers, of which one is connected to an inlet conduit for the liquid to be filtered, and the other is connected to an outlet conduit for the filtered liquid.

20 The cartridge is removably fixed in a sealed manner to the inner region of the cover by a snap connection system, which does not require detailed description. It is sufficient to note that the system comprises first engagement means which extend beyond the inner face of the cover or the facing end face of the cartridge, and second engagement means 25 matching the preceding and extending beyond said facing end face or said inner face, said first and second engagement means being

CLAIMS

1. A filter for internal combustion engine liquids, comprising a casing (2) containing a toroidal filter cartridge (3) which separates the casing cavity into two chambers (21, 22) for passage of the liquid to be filtered and 5 passage of the filtered liquid respectively; a removable cover (4) closing said cavity and comprising the inlet and outlet conduits for the liquid; the region of the cover facing the casing being connected to the facing end of the cartridge by a snap connection system comprising two complementary parts (10, 111) which are associated with the cover and with the cartridge 10 respectively, and can be connected together by axially sliding said cartridge, characterised in that that part (10) of the system associated with the cartridge is located within the central compartment of this latter, and that part (111) of the system associated with the cover is dimensioned and shaped to be able to be inserted into the preceding and coupled thereto, 15 where it retains the facing end of the cartridge in the immediate vicinity of the cover.
2. A filter as claimed in claim 1, characterised in that that system part (10) installed on the cartridge consists of an annular body (100), a part of which is inserted into said central compartment, where it provides the 20 engagement seat for that system part (111) installed on the cover.
3. A filter as claimed in claim 2, characterised in that said engagement seat comprises a circumferential series of equidistant recesses (104) which are provided along the free edge of said annular body part inserted into said central compartment.
- 25 4. A filter as claimed in claim 3, characterised in that each portion of the annular body (100) between two recesses (104) comprise a depressed

curved transverse surface (106) provided on the inner cylindrical surface of the annular body and having its centre of curvature outside the longitudinal axis thereof so as to present a depth which, starting from a side of the respective recess, decreases until it becomes zero before

5 reaching the next recess.

5. A filter as claimed in claim 4, characterised in that beyond the zero-depth end of said depressed curved surface and spaced from it, the annular body presents an internal abutment (105) which defines said predetermined angle for releasing the cartridge.

10 6. A filter as claimed in claim 1, characterised in that that system part (111) installed on the cover comprises a projecting sleeve which is intended to be inserted practically as an exact fit into said annular body, and from the free end of which there branch a number of longitudinal tangs (112) equal to the number of recesses (104) of said annular body,

15 15 each tang being provided with an outer terminal tooth (113) to engage the bottom edge of the respective recess.

7. A filter as claimed in claim 1, characterised in that a sealing engagement device is interposed between said complementary constituent parts of said snap connection system.

20 8. A filter as claimed in claim 7, characterised in that said sealing engagement device comprises an annular gasket located in an outer circumferential groove provided on a part of the annular body which extends beyond the cartridge, and faces an enclosing skirt carried by the cover.

25 9. A filter as claimed in claim 8, characterised in that said skirt is dimensioned to act as a limit stop during the engagement of the snap

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connection system.